

What is claimed is:

1. A cleaning device for cleaning a surface comprising:

a base for movement along a surface;

5 a suction nozzle associated with said base;

a suction source for drawing liquid and dirt from said surface through
said suction nozzle;

a brush assembly operatively connected to said base; and

wherein said brush assembly having at least one brush including a first
10 set of pliable elements extending downwardly from said brush and contacting the
surface, said pliable elements sloping downwardly and outwardly, said first set of
pliable elements having at least a first group of pliable elements and a second group of
pliable elements, each of said pliable elements of said second group of said first set
extending downwardly from said brush at a length less than said first group of said first
15 set, said second group of pliable elements of said first set being positioned inwardly
from said first group of said pliable elements of said first set.

2. The cleaning device of claim 1 including a liquid distribution system for
dispensing liquid to said surface, a second set of pliable elements extending
20 downwardly from said brush and contacting the surface, said second set of pliable
elements located inwardly from said first set of pliable elements, said brush having at
least one opening for dispensing the liquid to the cleaning surface, said opening being
located between said first and second set of pliable elements.

3. The cleaning device of claim 1 including a second set of pliable elements extending downwardly from said brush and contacting the surface, said second set of pliable elements located inwardly from said first set of pliable elements, said second set of pliable elements having at least a first group of pliable elements and
5 a second group of pliable elements, each of said pliable elements of said second group of said second set extending downwardly from said brush at a length less than said first group of pliable elements of said second set.

4. The cleaning device 1 wherein said first set of said pliable elements
10 are arranged in separate bundles forming a ring around said brush.

5. The cleaning device of claim 4 wherein each of said bundles includes said first and second groups of pliable elements, said second group of pliable elements having at least a first pliable element extending a first length, at least a second pliable
15 element extending a second length greater than the first length of said first pliable element, and at least a third pliable element extending a third length greater than the second length of said second pliable element.

6. The cleaning device of claim 5 wherein said first pliable element is
20 positioned inwardly from said second pliable element, said second pliable element is positioned inwardly from said third pliable element.

7. The cleaning device of claim 5 including at least a substantial number of said pliable elements of said second group having an innermost pliable element and

an outermost pliable element, each of said pliable elements having a working end, wherein said substantial number of said pliable elements are cut such that a plane extending from the bottom end of the innermost pliable element to the bottom end of the outermost pliable element is in the range of 40 to 50 degrees with respect to the
5 cleaning surface.

8. The cleaning device of claim 7 wherein said substantial number of said pliable elements of said second group are arranged in increasing length going from the from the innermost pliable element to the outermost pliable element.

10 9. The cleaning device of claim 1 wherein said each of said pliable element is angled outwardly in the range of 20 to 40 degrees with respect to an axis perpendicular to the cleaning surface.

15 10. The cleaning device of claim 1 wherein said pliable elements are bristles.

11. The cleaning device of claim 10 wherein said bristles are crimped.

12. The cleaning device of claim 1 wherein said brush is rotatable.

20 13. The cleaning device of claim 9 wherein said brush assembly includes a plurality of said brushes, said brushes being gear brushes and arranged in a gear train, each said brush rotating about a vertical axis.

14. A cleaning device for cleaning a surface in which cleaning solution is dispensed to the surface and substantially simultaneously extracted along with the dirt on the surface in a continuous operation comprising:

a base for movement along a surface;

5 a recovery system mounted to said base and comprising:

a suction nozzle;

a suction source for drawing liquid and dirt from said surface through said suction nozzle;

a liquid distribution system for dispensing liquid to said surface;

10 a brush assembly operatively connected to said base; and

wherein said brush assembly has at least one brush including a first set of pliable elements extending downwardly from said brush and contacting the surface, said pliable elements of said first set sloping downwardly and outwardly, said brush including a second set of pliable elements extending downwardly from said brush and contacting the surface, said second set of pliable elements located inwardly from said first set of pliable elements, said brush having at least one opening for dispensing the liquid to the cleaning surface, said opening being located between said first and second sets of pliable elements.

20 15. The cleaning device of claim 14 wherein said second set of pliable elements slopes downwardly and outwardly.

16. The cleaning device of claim 15 wherein said first set of pliable elements has at least a first pliable element extending a first length, at least a second

pliable element extending a second length greater than the first length of said first pliable element, and at least a third pliable element extending a third length greater than the second length of said second pliable element.

5 17. The cleaning device of claim 16 wherein said second set of pliable elements has at least a first pliable element extending a first length, at least a second pliable element extending a second length greater than the first length of said first pliable element, and at least a third pliable element extending a third length greater than the second length of said second pliable element.

10 18. A cleaning device for cleaning a surface comprising:
 a base for movement along a surface;
 a suction nozzle associated with said base;
 a suction source for drawing liquid and dirt from said surface through

15 said suction nozzle;
 a brush assembly operatively connected to said base;
 said brush assembly having at least one brush including a first set of pliable elements extending downwardly from said brush and contacting the surface, wherein said first set of pliable elements has at least a first pliable element extending a
20 first length, at least a second pliable element extending a second length greater than the first length of said first pliable element, and at least a third pliable element extending a third length greater than the second length of said second pliable element;
and

 wherein said first pliable element is positioned inwardly from said second

pliable element, said second pliable element is positioned inwardly from said third pliable element.

19. The cleaning device of claim 18 wherein said brush is rotatable.

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20. The cleaning device of claim 19 wherein said brush assembly includes a plurality of said brushes, said brushes being gear brushes and arranged in a gear train, each said brush rotating about a vertical axis.